

The opinion in support of the decision being entered today was **not** written for publication and is **not** binding precedent of the Board.

Paper No. 39

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte TETSUYA MIZUSUGI, KAZUNORI YUKI
and MITSUO TANAKA

Appeal No. 2000-0068
Application 08/858,116¹

ON BRIEF

Before METZ, GARRIS and PAK, *Administrative Patent Judges*.

METZ, *Administrative Patent Judge*.

DECISION ON APPEAL

This is an appeal under 35 U.S.C. § 134 from the examiner's refusal to allow claims 5 through 8 and 10, all the claims remaining in this application.

¹ Application for patent filed May 19, 1997. According to the official records of the Patent and Trademark Office (PTO), this application is a continuation of Application Serial Number 08/548,418, filed on October 26, 1995, and now abandoned, which is a continuation of Application Serial Number 08/204,536, filed on March 2, 1994, and now abandoned.

THE INVENTION

The appealed subject matter is directed to a method for shaping a sheet of glass heated to nearly its softening point. The method comprises placing a heated sheet of glass on a ring mold and subsequently lowering a mold having two shaping sections in which a vacuum generated therein brings the heated sheet of glass into proximity to the mold's shaping surfaces. A vacuum is generated in the first shaping area to attract the heated sheet to the mold's surface to shape a first area of the sheet. Thereafter, a vacuum is generated in a second section of the mold to attract the heated glass to the mold's second shaping surface to shape the area of the heated sheet complementary to the first area. After shaping the glass sheet is released onto a quenching ring and transported on the quenching ring to a quenching zone.

According to appellants, their method obtains a shaped glass sheet having higher quality than glass sheets as prepared by the prior art methods. Additionally, appellants allege that their method avoids damaging the glass sheet as happens using the prior art methods.

Claim 10, the only independent claim before us for our consideration, is believed to be adequately representative of the appealed subject matter and is reproduced below for a more facile understanding of the claimed invention.

10. A method of shaping a sheet of glass heated nearly to a softening point thereof with a suction mold including first and second suction chambers having respective first and second shaping surface areas, comprising the steps of:

placing the sheet of glass on a ring mold;

lowering said suction mold toward said ring mold to an extent that the shaping surface areas come close to the sheet of glass on said ring mold;

developing a first vacuum in said first suction chamber at a first time to attract a first area of the sheet of glass against the first shaping surface area to shape the first area of the sheet of glass and then developing a second vacuum in said second suction chamber at a second time to attract a second area of the sheet of glass against the second shaping surface area to shape the second area of the sheet of glass complementary to the first area, said first time being before said second time so that the sheet of glass is successively brought against the first and second shaping surface areas; and

then releasing the sheet of glass from the first and second shaping areas of the suction mold onto a quenching ring and moving the sheet of glass on the quenching ring to quenching.

THE REFERENCES

The references of record which are being relied on by the examiner as evidence of obviousness are:

Seymour	4,229,200	October 21, 1980
Kuster et al. (Kuster)	4,859,225	August 22, 1989
McMaster	4,609,391	September 2, 1986

THE REJECTIONS

Claims 5 through 8 and 10 stand rejected under 35 U.S.C. § 103 as being unpatentable because the subject matter claimed therein would have been obvious at the time appellants made their

invention from the disclosure of Seymour considered with either Kuster or McMaster. We affirm.

OPINION

Appellants have failed to argue with any reasonable degree of specificity the patentability of any dependent claim. Further, on page 3 of their brief, appellants state that claims 5 through 8 and 10 are considered to stand or fall together. We shall decide this appeal based on the patentability of independent claim 10. See 37 C.F.R. § 1.192 (c)(7), first sentence. Accordingly, the patentability of all the claims stands or falls with independent claim 10 on which they depend. In re Nielson, 816 F.2d 1567, 1572, 2 USPQ2d 1525, 1528 (Fed. Cir. 1987); In re Kroekel, 803 F.2d 705, 709, 231 USPQ 640, 642 (Fed. Cir. 1986).

We begin by analyzing the scope and content of appellants' claims. Appellants claim a method for shaping a glass sheet heated nearly to the sheet's softening point. Appellants method utilizes a shaping mold having respective first and second shaping surfaces and which also include corresponding separate first and second vacuum chambers. We refer to appellants' specification at page 8, line 5 through page 9, line 22; page 11, lines 7 through 15 and to Figures 2, 4 and 5 of the drawings for an explanation of the details of suitable shaping molds for use in the second step of appellants' process. In the third step of the claimed process a first vacuum is generated in the first

section of the shaping mold to attract the heated sheet of glass to the shaping mold and to shape a first area of the sheet corresponding to the shape of the first shaping surface.

Subsequently a vacuum is generated in the second section of the shaping mold to attract a second area of the heated sheet of glass complementary to the first area of the heated sheet of glass against the second section of the shaping mold to shape the second area of the heated sheet of glass corresponding to the shape of the second shaping surface. In the fourth step of the claimed method the shaped heated sheet of glass is released from the shaping molds onto a quenching ring and moved on the quenching ring to a quenching station.

Appellants claim a process "comprising" four positively recited manipulative steps. The term "comprising" is recognized as an open-ended claim term. That is, as a "comprising" claim, Claim 10 does not exclude any other steps disclosed in the prior art, including both those disclosed but not claimed by appellants and those neither disclosed nor contemplated by appellants. In re Baxter, 656 F.2d 679, 686, 210 USPQ 795, 802 (CCPA 1981).

According to page 5 of appellants' brief, the examiner's stated rejection is not sustainable because Seymour, the primary reference, and both McMaster and Kuster, the secondary references, are directed to processes so different from the claimed process that they would not have suggested to a person of

ordinary skill in the art appellants' claimed process. Specifically, appellants urge that the examiner has mischaracterized the disclosure of Seymour which is directed to so-called "drop forming" glass sheets, where heated sheets of glass held above a mold by the force of a vacuum are dropped to a shaping mold below, and not vacuum forming as claimed by appellants. See the reply brief at page 3. According to appellants' arguments, Seymour teaches the use of physical force applied against the glass sheet, not a vacuum, to shape the glass sheet. For reasons set forth fully below, we do not find any of appellants' arguments to be persuasive.

Seymour, as correctly observed by appellants, is directed to a so-called drop forming method of shaping glass sheets wherein a heat-softened glass sheet is elevated by means of a vacuum platen which holds the heated glass sheet against it in register and thereafter the glass sheet is released onto a shaping mold below to effect final shaping (column 2, lines 26 through 46). Additionally, Seymour discloses auxiliary shaping means used in conjunction with the vacuum platen are utilized to impart localized curvature to side portions of the glass sheet, that is, the heated glass sheet is shaped. The flat part of the platen is designed to engage less than the full area of the sheet, leaving side portions of the glass sheet extending beyond the flat side of the vacuum platen. The auxiliary shaping means act upon the

portions of the glass sheet extending beyond the flat portion of the vacuum platen as the glass sheet is held on the flat platen by vacuum to shape the portions of the glass sheet extending beyond the flat surface of the vacuum platen corresponding to the shape of the auxiliary shaping means (see column 2, lines 49 through 60). We refer to elements **40**, **120** and **121** in Figure 16 and their definition at column 11, lines 57 through 62 for a description of the vacuum platen and the "auxiliary shaping means."

In one embodiment described in Figures 16 through 20, Seymour discloses forming glass sheets using auxiliary shaping means. In this embodiment, on which the examiner has relied as the basis for rejecting the claims, the flat vacuum platen **40** is flanked by a pair of curved shaping blocks **120**. The curved shaping blocks are stationary and are provided with vacuum means via conduits **121**. A hearth block **125**² which extends beyond the ends of the platen and underlies the shaping blocks supports the heated sheet of glass. The flat vacuum platen **40** may be lowered vertically to engage and lift the heated sheet of glass by vacuum. As the sheet is raised by the vacuum platen a lifting frame **126** is raised to follow the heated glass sheet as it is

² Seymour discloses the alternative use of lifting rings to raise the heated glass sheet towards the flat vacuum platen in another embodiment of his invention. See column 10, lines 16 through 39.

raised. The lifting frame is maintained in close proximity to or in light contact with the underside of the heated glass sheet. When the vacuum platen reaches its uppermost position the lifting frame continues to move upwardly to bring the shaping rails 124 "into close proximity to the curved shaping surfaces of the shaping blocks 120" (column 12, lines 11 through 16). Preferably, vacuum is drawn through the shaping blocks 120 to maintain the adjacent portions of the heated glass sheet in contact with the shaping blocks as the lifting frame 126 is lowered to its retracted position (column 12, lines 16 through 20). Thereafter, the vacuum is released in the flat vacuum platen 40 and in the shaping blocks 120 and the glass sheet is dropped onto the shaping mold 128 to further shape the flat central portion and wherein the relatively deep bend in the side portions of the glass sheet is retained or further deepened (column 12, lines 24 through 31). The examiner relies on McMaster and Kuster as evidence that "quenching rings" were well known in the art of glass shaping for transporting a shaped sheet of glass from the shaping station to a quenching station.

We consider appellants' argument that Seymour is directed to a different process than claimed is founded on too narrow a reading of both claim 10 and Seymour's disclosure. Claim 10 merely requires that a "suction mold" is lowered toward the heated sheet of glass so that the shaping surface of the "suction

mold" is "close" to the sheet of glass. This is precisely shown and described in Seymour's description of the vacuum platen **40** and in his description of his glass shaping process using the auxiliary shaping blocks **120**. Further because the heated sheet of glass in Seymour is soft and capable of being shaped, when it came in contact with Seymour's flat vacuum platen by the attraction thereto resulting from the application of a vacuum, the glass sheet would necessarily take the shape of Seymour's vacuum platen, in this case a flat, planar surface. It does not matter that Seymour's vacuum platen is also used to move the heated sheet of glass because the vacuum platen does impart shape to the heated glass sheet. We also note that appellants' suction mold, like Seymour's vacuum platen, also moves the heated sheet of glass in appellants' process (see page 9, lines 23 and 24 of the specification). Further, appellants, like Seymour, develop a vacuum first in the chamber corresponding to the vacuum platen **40** in Seymour and subsequently in the second shaping surface areas corresponding to Seymour's shaping boxes **120**.

While Seymour does provide for additional shaping after the release of the vacuum in his process by dropping the partially shaped sheet of glass on a mold for final shaping, there is still shaping performed by the shaping boxes **120** when the glass sheet is soft from heating and lifted from the hearth block (note Seymour's disclosure that the shape of the glass from contact

with the shaping blocks is retained). That is all that Claim 10 requires. Further, we observe that Claim 10 merely recites a "suction mold" and appellants have disclosed that useful suction molds include molds with convex surfaces, concave surfaces, "an upper suction mold", "a lower suction mold" or a "hanging press mold." At page 7 of the specification appellants describe the lower central area of the suction chamber as having a "substantially flat bottom panel which serves as a central flat area of the shaping surface." Thus, we do not understand Claim 10 to exclude or distinguish from the vacuum platen **40** used by Seymour.

As a "comprising" claim, Claim 10 also does not exclude the steps in Seymour providing for additional shaping after the removal of a vacuum from the glass sheet or the additional curved shaping rails used in Seymour's method before the application of a vacuum. Claim 10 does not recite or require any particular degree of shaping but merely requires shaping. Seymour's process clearly shapes the heated glass sheets while they are in contact with the vacuum platen **40** and shaping blocks **120** and, therefore, meets the "to shape" limitation recited in Claim 10. Appellants' argument that after shaping the glass sheet in their process is moved "directly to the quenching ring" is simply not reflected in the language of claim 10. Moreover, as a "comprising" claim, Claim 10 does not exclude other intervening steps between the

shaping stage and the quenching stage.

Appellants have not proffered any persuasive argument with respect to the examiner's reliance on McMaster and Kuster as evidence that "quenching rings" were well-known expedients in the glass shaping art for transporting hot, shaped sheets of glass from a shaping stage to a quenching stage. Rather, appellants have simply argued that McMaster and Kuster, like Seymour, are not relevant because they, too, are directed to drop forming. Nevertheless, as we have concluded above, appellants' claims are of such a scope as not to exclude further subsequent shaping by dropping the already-shaped hot sheet of glass on a shaping mold. We also observe as we have noted above that Seymour does disclose the use of ring molds for moving heated glass sheets in a shaping process.

Having concluded that the examiner has made out a prima facie case of obviousness with respect to the appealed subject matter, it is necessary for us to consider appellants' rebuttal evidence, if any, and to reconsider the prima facie case anew in light of all the evidence. In re Piasecki, 745 F.2d 1468, 1472, 223 USPQ 785, 788 (Fed. Cir. 1984). However, except for appellants allegation on page 5 of their brief of the alleged benefits of the process of Claim 10 compared to the prior art, appellants have neither presented any rebuttal evidence nor advanced any arguments with respect to any probative showing of

surprising or unexpected results represented by objective evidence in this record. It by now well-settled that attorney argument does not take the place of probative, objective evidence of non-obviousness. Accordingly, the *prima facie* case of obviousness stands un rebutted.

OTHER ISSUES

In reviewing the entire record in this proceeding we have noted that cited in the prosecution of both Seymour and Kuster is U.S. Patent Number 3,846,104, issued on November 5, 1974 to Seymour. Therein, in Figure 1, Seymour describes a process for shaping a sheet of glass heated to its softening point by placing a heated sheet of glass on a ring mold (column 5, lines 47 through 51; column 6, lines 4 through 6); lowering a vacuum suction mold to the heated glass sheet to shape the same by vacuum (column 6, lines 20 through 44); and, subsequently transporting the shaped glass sheet via a tempering ring to a quenching station (column 6, lines 45 through 48; lines 70 through 75). In the event appellants elect to further prosecute the subject matter of this application in another application both the appellants and the examiner should consider the relevance of this reference to the claimed subject matter under the statute.

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SUMMARY

The rejection of the claims 5 through 8 and 10 under 35
U.S.C. § 103 is **affirmed**.

The decision of the examiner is **AFFIRMED**.

No time period for taking any subsequent action in
connection with this appeal may be extended under 37 C.F.R.
§ 1.136(a).

AFFIRMED

ANDREW H. METZ)	
Administrative Patent Judge)	
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BRADLEY R. GARRIS)	BOARD OF PATENT
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